

# Activity Book

Join Emily the  
engineer on a  
rail adventure

Win a family  
trip on



EUROSTAR™



## Introduction

Meet Adam



Meet Alice



Meet Alice (aged 7) and Adam (aged 6), friends of Emily the Engineer and winners of Network Rail's 'A World Without Women' competition.

For this year's International Women in Engineering Day (2020) they have taken the time to research and showcase the work of 2 great female engineers – Dawn Child's (President of WES) and Mary Jackson (Aerospace Engineer).

Emily loved their work so much, that she has invited them to be part of her activity book! Let's congratulate them on their work and maybe research the impact of a female engineer yourself!

Hi, I'm Emily and I'm an engineer on the railway. In this activity book, we are going to go on a rail adventure to learn about engineering. If you'd like to learn more then go online at: [www.networkrail.co.uk/careers/at-school/](http://www.networkrail.co.uk/careers/at-school/)  
Thanks, Emily



## Colouring

Help bring the picture to life by colouring in the train as it leaves the station



**YOUNG RAIL**  
PROFESSIONALS



into rail

**RAILWEEK**

5 - 11 OCT 2020

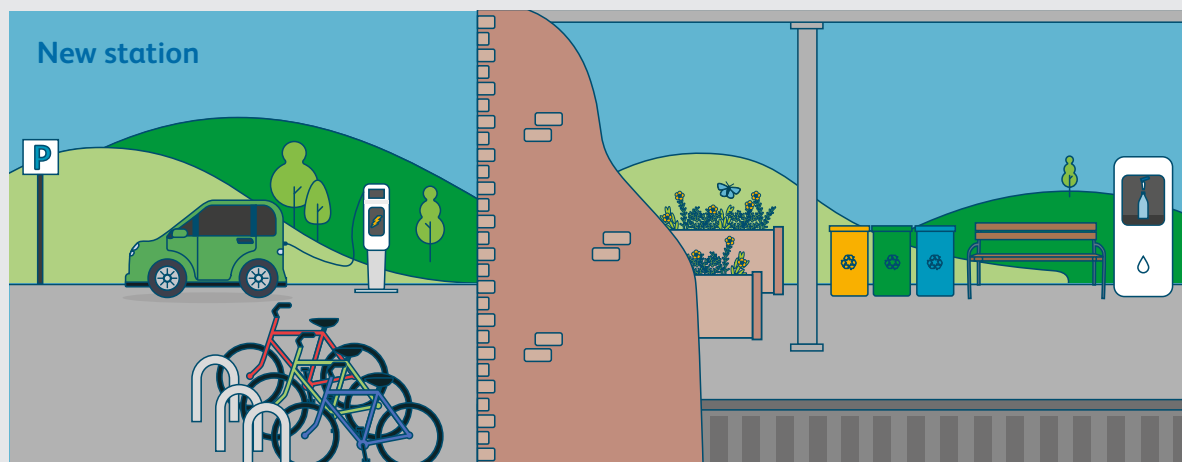
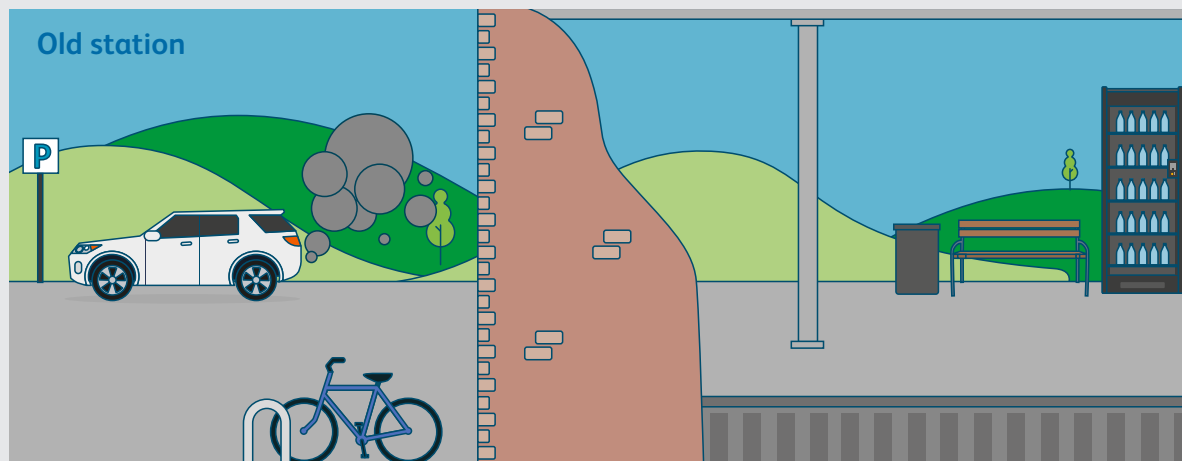
Rail Week celebrates the diverse and rewarding career opportunities available across the rail sector. The dedicated week of activity aims to address the skills shortage in rail-related roles and inspire a generation of young people through a series of virtual events, visits and talks. Find out more at [www.railweek.com](http://www.railweek.com)



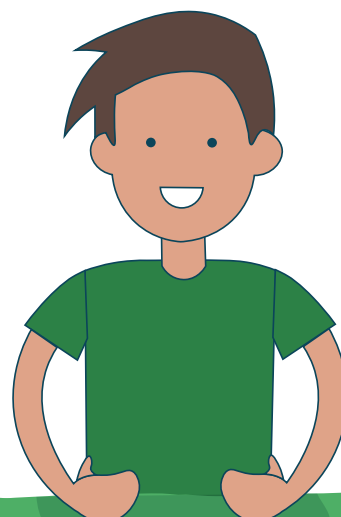
# Spot the difference

By making small changes to everyday places like our stations, we can encourage people to be tidy and save energy – looking after the environment.

Can you spot how many ways we have changed this station?



Hi I'm Elliot the Environmentalist. I work with Emily and other workers on the railway to make sure we look after the environment properly.



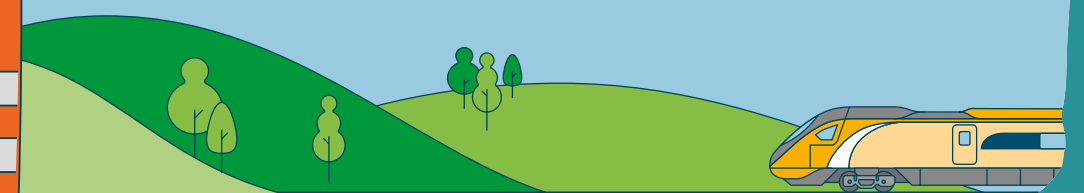
# Word search

Our railway lines pass woods and forests, embankments and people's gardens, and you will see many different trees from your train window.

Can you find them all hidden in the word search below?

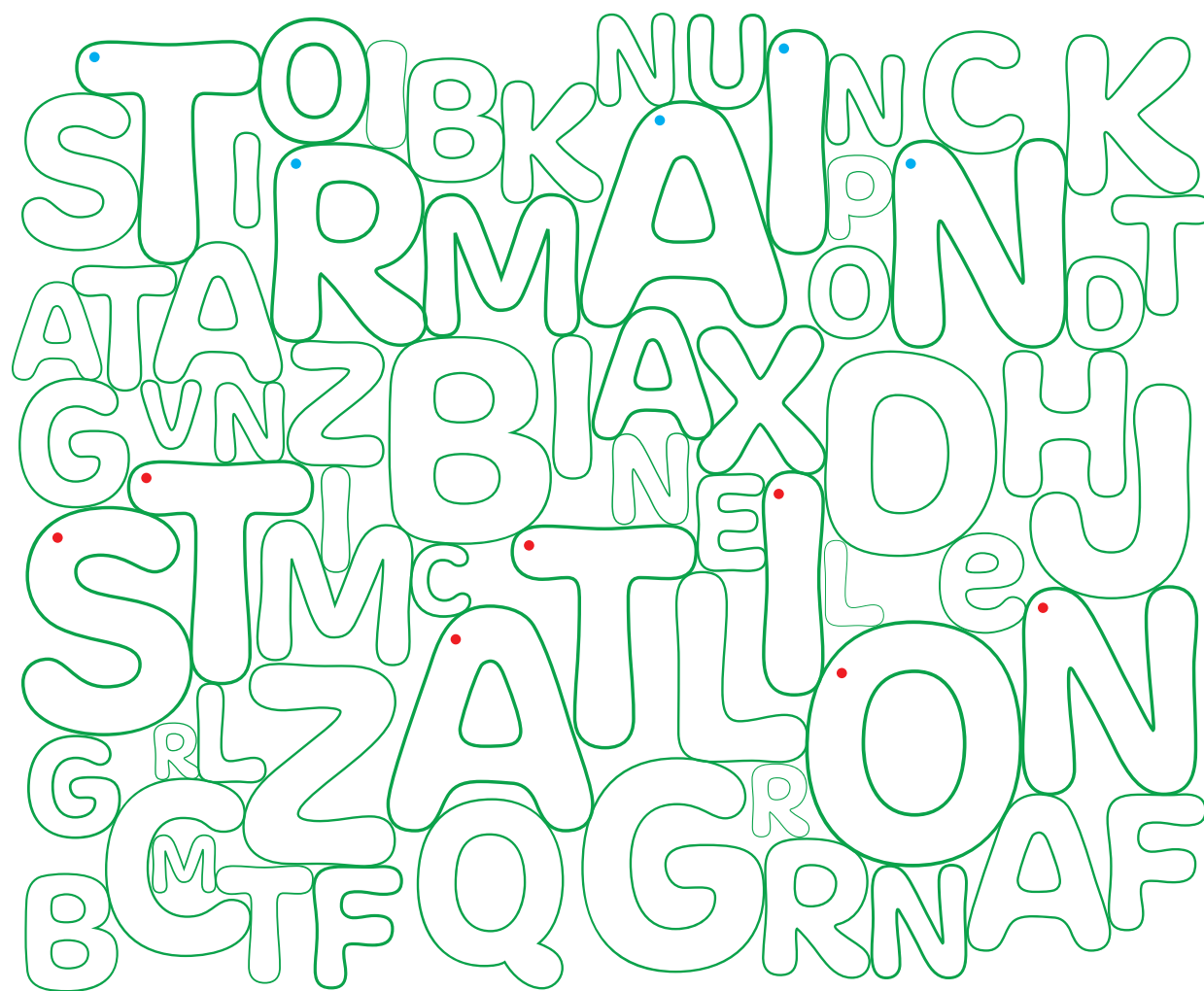
YEW  
BIRCH  
SYCAMORE  
POPLAR  
SCOTS PINE  
HOLLY  
HAZEL  
ELDER  
OAK  
ASH

G	P	S	C	O	T	S	P	I	N	E
L	H	O	A	K	P	M	R	S	D	H
E	D	Z	E	L	D	E	R	Y	R	O
C	Y	S	W	K	H	A	I	C	P	L
B	I	R	C	H	A	S	U	A	O	L
P	O	P	I	O	Z	H	I	M	P	Y
A	L	Y	E	W	E	O	C	O	W	O
Z	P	O	O	O	L	O	O	R	E	H
O	S	P	O	P	L	A	R	E	A	Y



## What does it say

Colour the letters the same colours as the dot they have, to reveal a message.



Find out more about all the exciting learning opportunities the railway has to offer. Here are some useful materials to keep you busy while you're at home:  
[www.networkrail.co.uk/stories/educational-resources-for-children](http://www.networkrail.co.uk/stories/educational-resources-for-children)



## Map maze

An intercity train travels at up to 125mph and weighs 400 tonnes – when it brakes, it will travel the length of 20 football pitches before it stops

### Maze

Can you find your way around these routes?

1. London – Penzance
2. London – Swansea
3. London – Norwich
4. London – Manchester
5. Manchester – Glasgow
6. Glasgow – Edinburgh
7. Edinburgh – London





# Design a train

Help Emily the engineer design the train of the future. Imagine and draw what your dream train would look like.



## Win a family trip on the Eurostar!

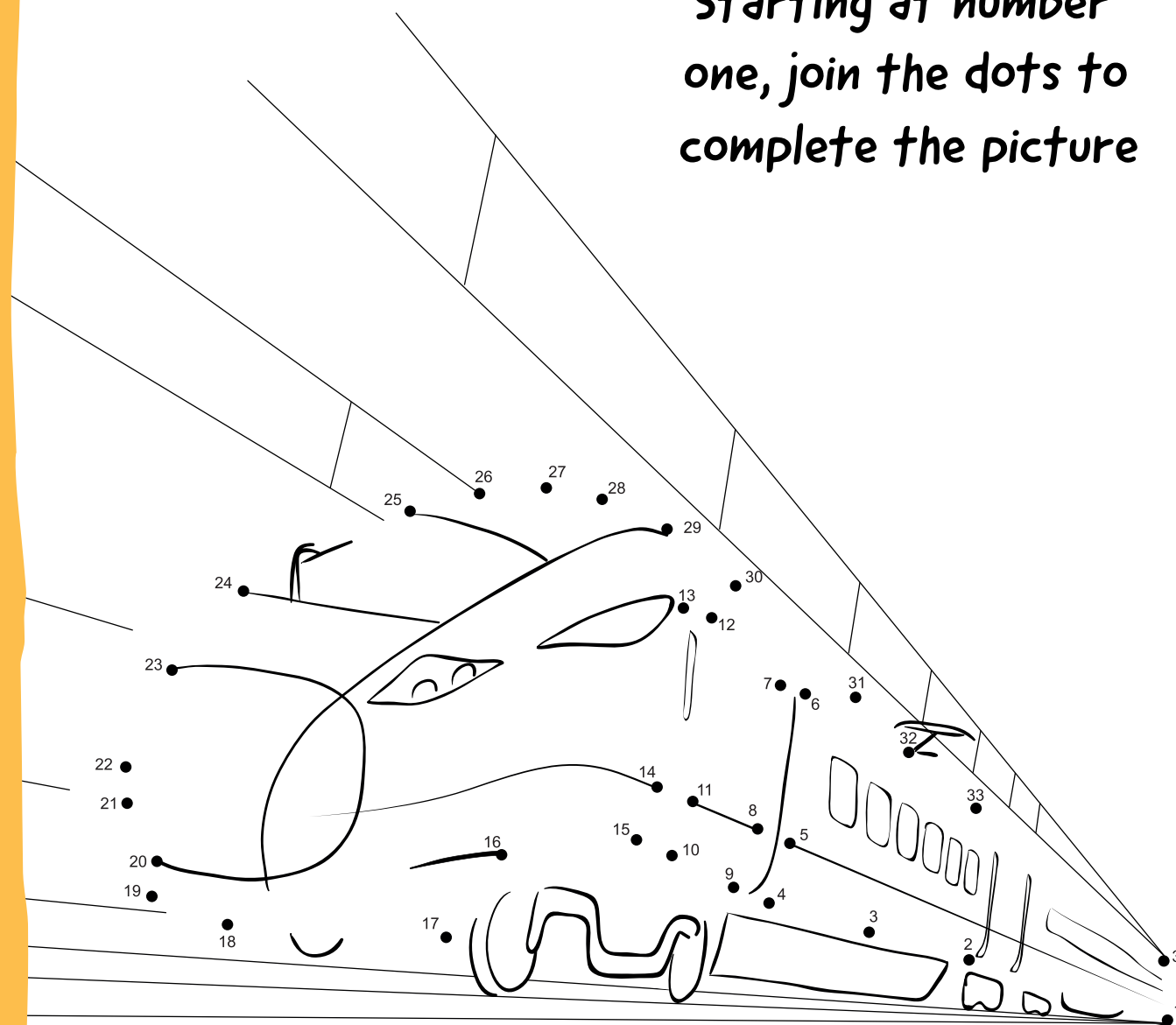
Enter the competition to win four return tickets for a trip from London to Paris Disneyland!

Simply ask an adult to email in a photo of your entry with your name and age to: [earlyengagement@networkrail.co.uk](mailto:earlyengagement@networkrail.co.uk) (closing date is Friday 20th November 2020).

T&Cs: By entering this competition you are giving Network Rail permission to promote your picture submitted, along with your name and age in promotional material. All entries must be submitted by 30th September 2020 midnight. The winner will be announced in October. The prize is for up to four people to travel on a return journey from London to Paris, Disneyland. The winner must be one of the people travelling on the trip and further booking conditions may apply.

# Join the dots

Starting at number one, join the dots to complete the picture

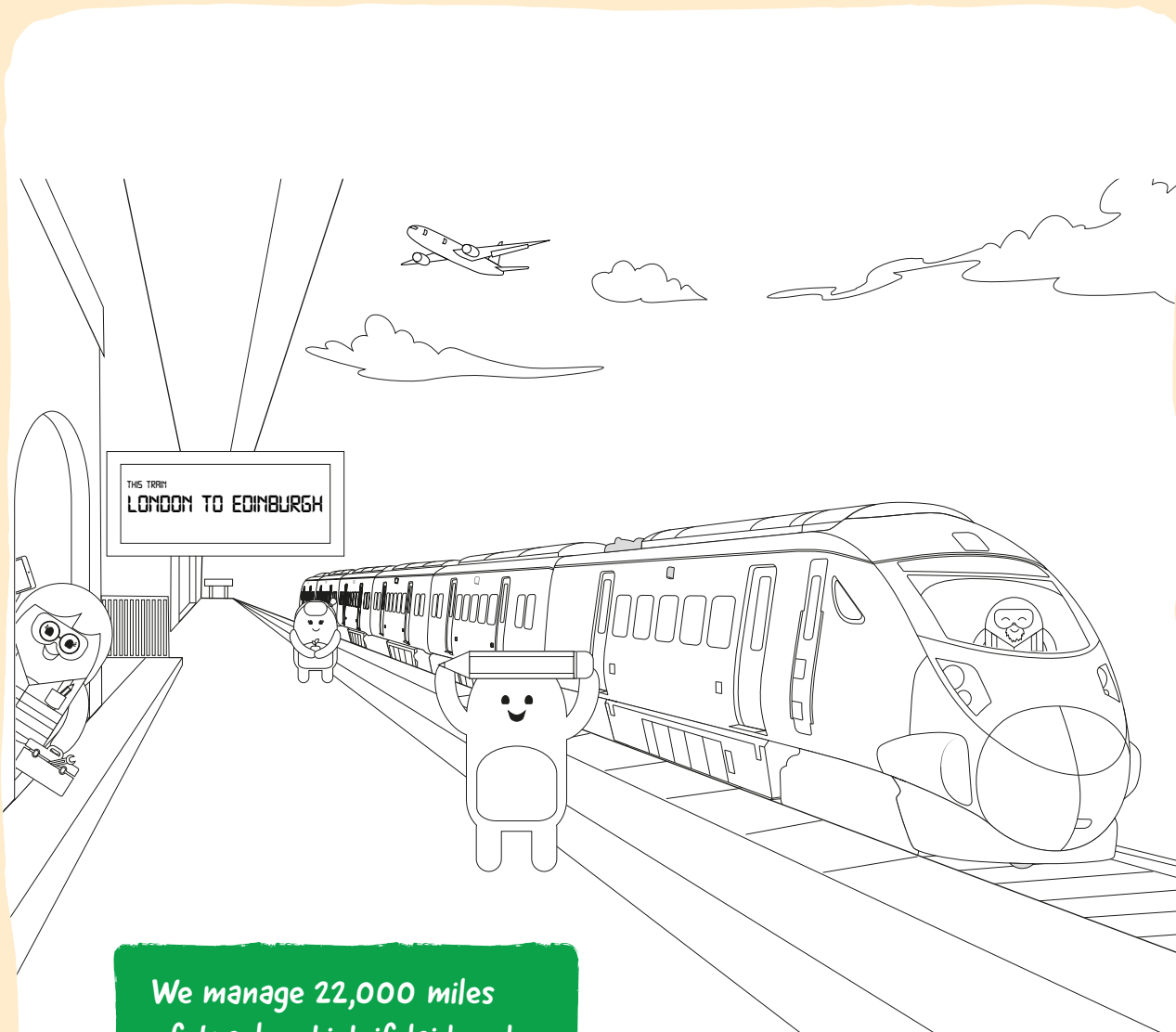


Network Rail has approx. 6.3 million trees growing beside the tracks –in 2018 our leaf busting trains covered approx. 1.4 million miles to keep the rail network clear. This is the equivalent to travelling to the moon and back three times.

## Colouring in

The Hitachi Rail team have decided to visit the famous Edinburgh Castle – the home of many kings and queens since the 12th century!

Help them get on their way by colouring in the train and station so the team can start their adventure.



We manage 22,000 miles of track, which if laid end to end, could nearly get you right around the world.

## Maths





Safety equipment is very important in keeping workers safe on the railway. Can you do some maths to work out what the hard hat, safety glasses and hi-visibility jacket are?






1.  +  +  +  = 16       = .....

2.  +  +  +  +  = 10       = .....

3.  +  +  = 21       = .....

4.  +  +  = .....

5.  +  +  +  = .....

6.  +  +  +  +  +  = .....

7.  +  +  +  = 17       = .....



# What type of Rail Engineer am I?

Can you match the description to the correct engineer?

1.

I understand and look after the software to control the signalling system, the ticketing system and the train information systems. I am a...

- ☐ A. Software engineer  
☐ B. Civil engineer  
☐ C. Electrical engineer  
☐ D. Mechanical engineer

2.

I understand and look after the electric motors, controls, radios and electric power. I am a...

- ☐ A. Software engineer ☐ C. Electrical engineer  
☐ B. Civil engineer ☐ D. Mechanical engineer

3.

I understand and look after the wheels, doors, and coaches of the trains. I am a...

- ☐ A. Software engineer ☐ C. Electrical engineer  
☐ B. Civil engineer ☐ D. Mechanical engineer

4.

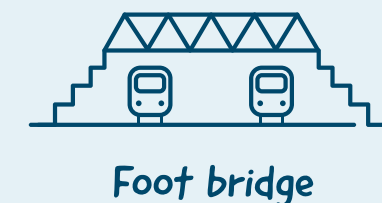
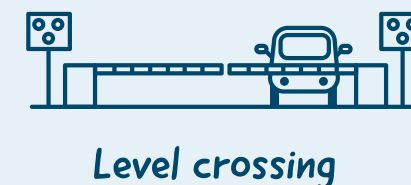
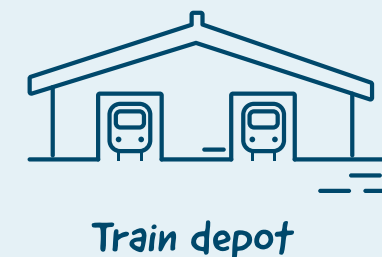
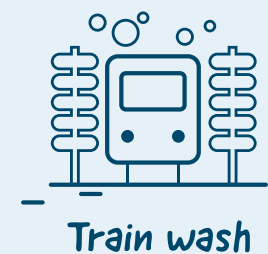
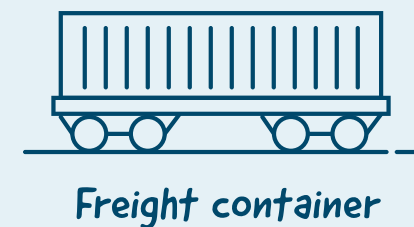
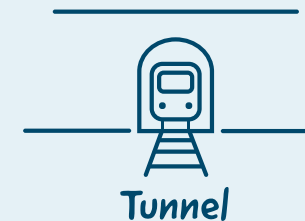
I understand and look after the tracks, bridges and tunnels. I am a...

- ☐ A. Software engineer ☐ C. Electrical engineer  
☐ B. Civil engineer ☐ D. Mechanical engineer



# I spy

When you travel on the train today, circle all of the things you see out of the window!



Can you spot anything else?

1. .... 3. ....  
 2. .... 4. ....

# Kriss Kross

We do all we can to make journeys more pleasant and comfortable for the millions of customers visiting our stations.

Can you work out where each word goes in the grid to complete the puzzle?

5 letters

CAFES  
SHOPS

7 letters

SEATING  
SHELTER  
TICKETS  
TOILETS

9 letters

TIMETABLE

10 letters

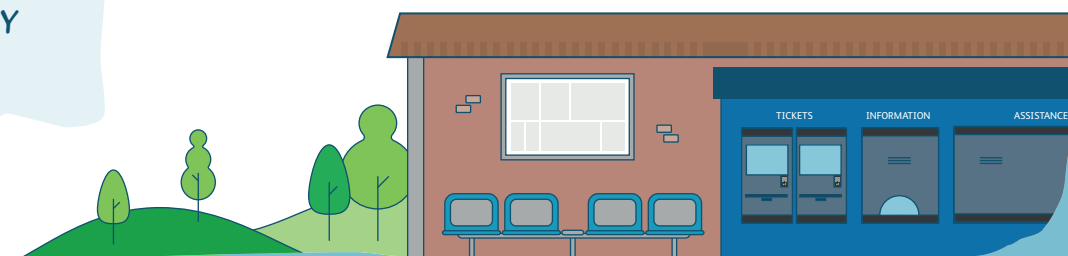
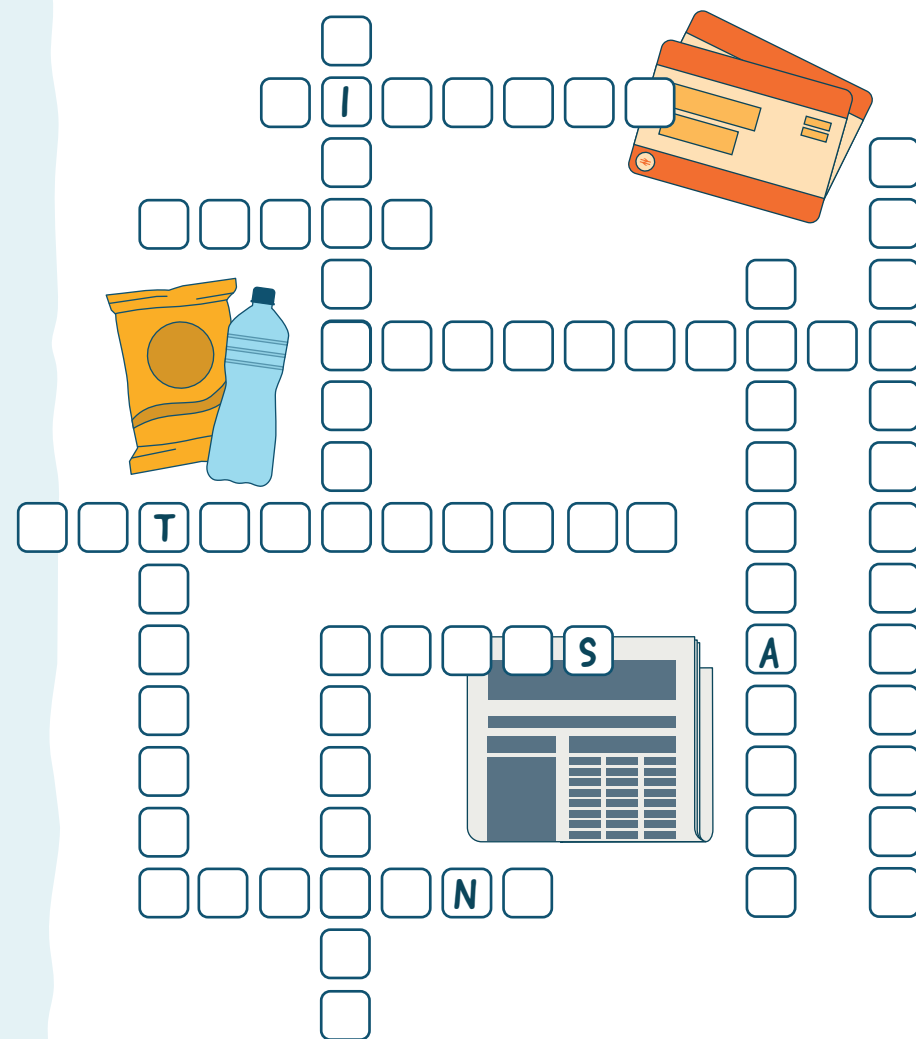
ASSISTANCE

11 letters

INFORMATION  
NOTICEBOARD

13 letters

ACCESSIBILITY



# Timetables

At Network Rail, we work round the clock to keep our trains running safely and reliably.

Use the train timetable to answer the following questions.

1.

If you arrive at Manchester Station at 3:00 pm, which train can you buy a ticket for?

.....

2.

How long does Train A take to get from Manchester to London?

.....

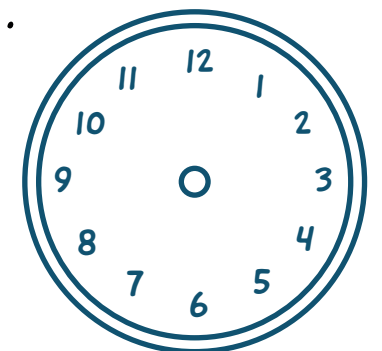
3.

If Train B stops at 5 stations along the journey, for 2 minutes each time, how many minutes is the train sat still for?

.....

4.

Draw the hands onto this clock to show what time you would arrive in London if you took Train C.



## Manchester to London Timetable

	Depart	Arrive
Train A	9:00 am	11:00 am
Train B	1:00 pm	3:30 pm
Train C	4:00 pm	7:00 pm



# Our partners

## A career in rail is more than you expect!

This activity book was funded by the kind support of our industry partners:



Network Rail owns, operates and develops Britain's railway infrastructure find out more.

[networkrail.co.uk](http://networkrail.co.uk)



We offer world class training across the rail industry.

[ntar.co.uk/our-courses](http://ntar.co.uk/our-courses)

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We run a high-speed rail link from England to Europe that runs under the English Channel.

[eurostar.com](http://eurostar.com)



You may not have heard of us, but each day, practically everyone in the UK benefits from a service we provide. If you've had a hot shower, taken a train or driven to work or had your rubbish collected it's pretty likely we helped with this.

[www.amey.co.uk](http://www.amey.co.uk)

**Rail Delivery Group**

 National Rail

We bring together the companies that run Britain's railway into a single team with one goal – to deliver a better railway for you and your community.

[raildeliverygroup.com](http://raildeliverygroup.com)



**YOUNG RAIL**  
PROFESSIONALS

Young Rail Professionals: We are the professional association for young people in the Railway Industry; promoting, inspiring and developing the next generation of railway talent.

[youngrailpro.com](http://youngrailpro.com)